

MPEC
PANEL

PLUGBOARD PROGRAMMING SYSTEMS

OEM DIVISION CATALOG 101



RECEIVERS

The receiver is the frame and engaging mechanism which accepts the removable plugboard. It contains the stationary contact springs which mate with the plugwire tips in the plugboard. On the models 901, 902, 903, 904, 921 and 922, the receiver is equipped with rails in which the plugboard is inserted from the top. On the remainder of the models, 908, 909, 910, 911 and 912, the plugboard is placed in the receiver bed from the front so that no vertical clearance is required. On the latter models, an integral door is incorporated so that the system is covered when the receiver is in the closed position. When in an open position, the plugboard in the receiver is angled towards the operator for easy plugwire changes.

All receivers are equipped with a mechanical interlock to prevent closing of the receiver if the plugboard is not properly seated. On the large systems, models 908 and 910, dash pots are employed to control the rate of opening and closing to eliminate mechanical shock.

MATERIAL AND SPECIFICATIONS

RECEIVER FRAMES

Models		Materials
Stationary	901, 902, 903, 904	Aluminum (Polished)
	908, 909, 910, 911, 912, 921, 922	Steel (Satin Chrome Plated)
Movable	All Models	Steel (Satin Chrome Plated)

RECEIVER PANELS

Material	Leakage Resistance Between Adjacent Holes	Hole Spacing (Center to Center)		
		Model	Horizontal	Vertical
Phenolic	$> 5 \times 10^{10}$	901, 909	.281"	.281"
Diallyl Phthalate (mineral filled, nylon fibre reinforced)	$> 1 \times 10^{13}$	All Other Models	.250"	.281"

CONTACT SPRINGS

Material	Plating Thickness	Average Contact Resistance	Continuous Current Rating	Maximum Operating Voltage (Sea Level)
Beryllium Copper (Heat Treated)	Nickel .0001"	Nickel Contact Spring to Nickel Tip .009 Ω	5 Amperes at 68° F	1500v DC/1000v RMS AC
	Gold .00006" (over .0001" Nickel)	Gold Contact Spring to Gold Tip .004 Ω		

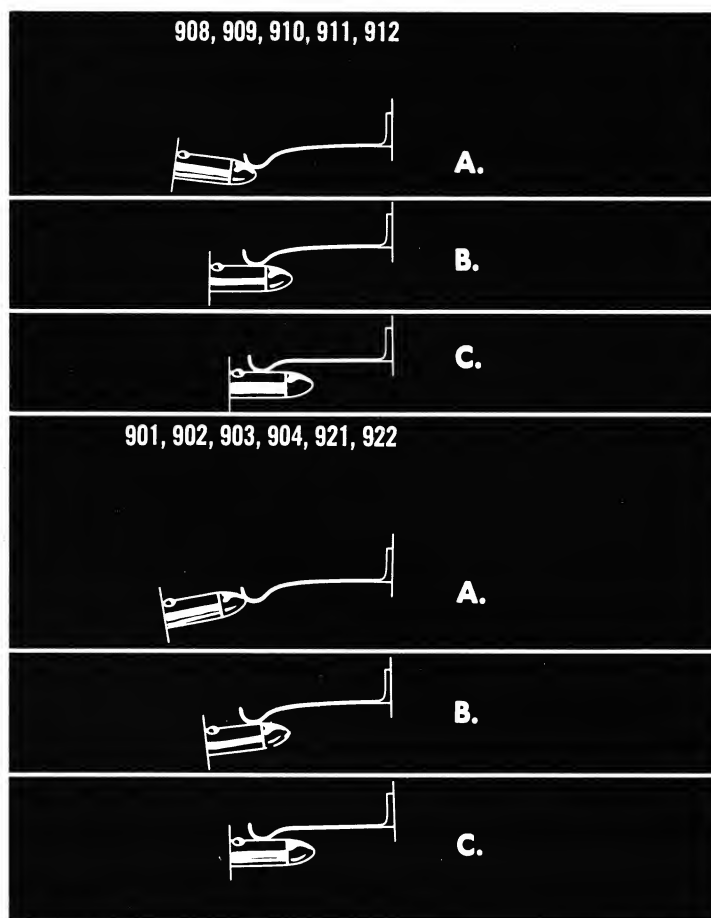
CAPACITANCE AND INDUCTANCE

		Phenolic	Diallyl
CAPACITANCE between adjacent contact springs and plugwire tip combination:	Horizontal	5.0 mmf.	5.98 mmf.
	Vertical	4.25 mmf.	5.10 mmf.
CAPACITANCE between one contact spring-plugwire tip combination and eight surrounding:		12.95 mmf.	15.5 mmf.
INDUCTANCE of contact spring—plugwire tip combination:		.05 μ h	

CLOSING ACTIONS

In models 908, 909, 910, 911 and 912, the plugwire tip first makes contact at an angle (A), coming in below the contact spring. As the closing action continues, the plugwire tip moves in further (B) and is almost horizontal. In the last stages of closing, cams raise the plugboard, displacing the contact spring (C) approximately .080", exerting a contact pressure of 7-8 ounces. In the process of closing, the contact spring travels 3/16" along the straight portion of the plugwire tip.

Models 901, 902, 903, 904, 921 and 922 are bottom pivoted and produce the necessary wiping action as the plugwire tip makes contact (A) and continues its upward wiping and lifting motion (B) until the plugwire tip has displaced the contact spring (C) approximately .080". In this process of closing, as above, the contact spring travels along the plugwire tip approximately 3/16".



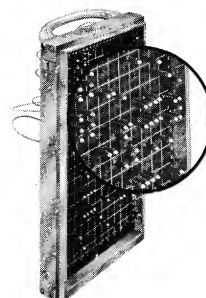
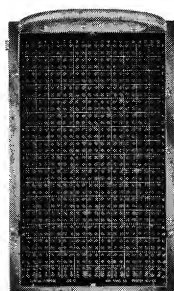
PLUGBOARDS

MAC Panel plugboards consist of one or more panels of molded general purpose black phenolic or blue diallyl phthalate set into extruded aluminum frames. The frames are accurately machined to assure interchangeability and accurate alignment between the plugwire tips and the receiver contact springs. Removable metal dust covers are available for all plugboards.

The plugboards accommodate manual or fixed self-contacting plugwires. A skirt around the plugboard extends below the projecting plugwire tips so that no damage will result when the plugboard is laid on a flat surface.

The molded panels are available either unmarked, silk-screened with MAC Panel's general purpose legend or silk-screened to order in one or more colors. The reverse side of the plugboard panels (and the panels of the receiver) can be silk-screened with the reverse image of the legend on the face of the plugboard. All silk screening is baked on by infrared heating.

The price of plugboards includes the cost of a silk-screened, one color MAC Panel general purpose legend. When a special legend is requested, an initial one-time charge for artwork and silk-screen construction is additional. Special legends should be submitted for quotations. Three copies of special legend drawings are required for silk-screen construction. Artwork remains the property of the customer and is available upon written request.



PLUGBOARD FRAMES

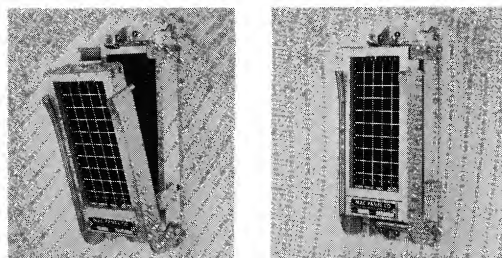
Model	Material
901	Aluminum Die Cast (Polished)
All other Panel Models	Extruded Aluminum (Polished)

PLUGBOARD INSERTS

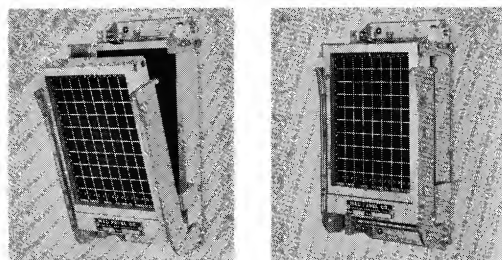
Material	Leakage Resistance Between Adjacent Holes	Hole Spacing (Center to Center)		
		Model	Horizontal	Vertical
Phenolic	$> 5 \times 10^{10}$	901, 909	.281"	.281"
Diallyl Phthalate (mineral filled, nylon fibre reinforced)	$> 1 \times 10^{13}$	All other models	.250"	.281"

RECEIVERS

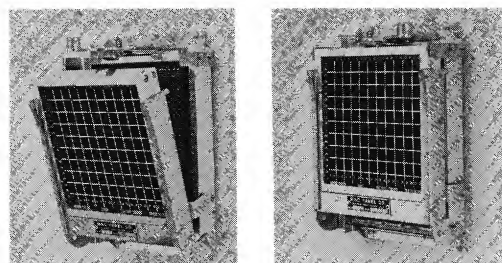
Number of Positions



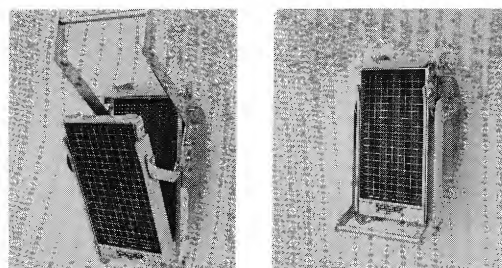
200 POSITIONS — MODEL 902



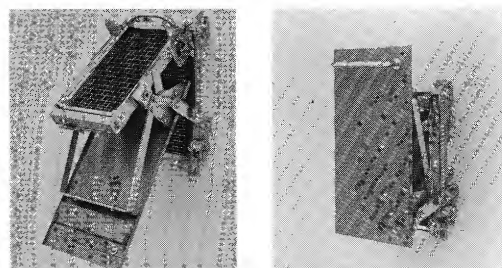
320 POSITIONS — MODEL 903



440 POSITIONS — MODEL 904



680 POSITIONS — MODEL 901



748 POSITIONS — MODEL 911

Position Arrangement		Panel Material	Contact Plating	Catalog Number	Dimensions and Weight	
Horizontal	Vertical					
10	20	Phenolic	Nickel	109021	Width: 4-3/32" Height: 10 3/8" Thickness: 3" Weight: 3 1/8 lbs.	
			Gold	109022		
		Diallyl Phthalate	Nickel	129021		
			Gold	129022		
16	20	Phenolic	Nickel	109031	Width: 5 1/8" Height: 10 3/8" Thickness: 3" Weight: 3 3/4 lbs.	
			Gold	109032		
		Diallyl Phthalate	Nickel	129031		
			Gold	129032		
22	20	Phenolic	Nickel	109041	Width: 7-3/16" Height: 10 3/8" Thickness: 3 3/4" Weight: 4 1/4 lbs.	
			Gold	109042		
		Diallyl Phthalate	Nickel	129041		
			Gold	129042		
20	34	Phenolic	Nickel	109011	Width: 8 5/8" Height: 14-1/16" Thickness: 5 7/8" Weight: 9 1/4 lbs.	
			Gold	109012		
		Diallyl Phthalate	Nickel	129011		
			Gold	129012		
22	34	Phenolic	Nickel	109111	Width: 10 3/8" Height: 16 3/4" Thickness: 6 3/4" Weight: 21 lbs.	
			Gold	109112		
		Diallyl Phthalate	Nickel	129111		
			Gold	129112		

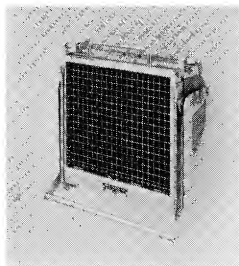
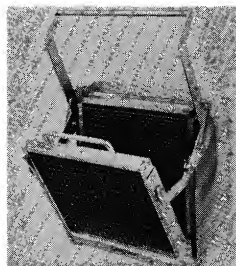
PLUGBOARDS

COVERS

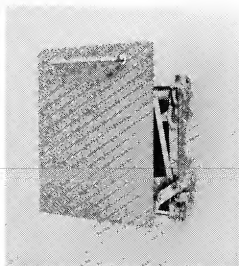
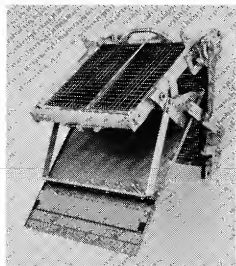
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	Phenolic	Blank	209020	Width: 3-9/16" Height: 6¾" Thickness: 1¼" Weight: 1 lb.	1"	219020
		General Purpose	209021			
		Special	209022			
	Diallyl Phthalate	Blank	229020		1¾"	239020
		General Purpose	229021			
		Special	229022			
	Phenolic	Blank	209030	Width: 5-1/16" Height: 6¾" Thickness: 1¼" Weight: 1¼ lbs.	1"	219030
		General Purpose	209031			
		Special	209032			
	Diallyl Phthalate	Blank	229030		1¾"	239030
		General Purpose	229031			
		Special	229032			
	Phenolic	Blank	209040	Width: 6⅝" Height: 6¾" Thickness: 1¼" Weight: 1½ lbs.	1"	219040
		General Purpose	209041			
		Special	209042			
	Diallyl Phthalate	Blank	229040		1¾"	239040
		General Purpose	229041			
		Special	229042			
	Phenolic	Blank	209010	Width: 6¼" Height: 10⅝" Thickness: 1-3/16" Weight: 2¼ lbs.	1"	219010
		General Purpose	209011			
		Special	209012			
	Diallyl Phthalate	Blank	229010		1¾"	239010
		General Purpose	229011			
		Special	229012			
	Phenolic	Blank	209110	Width: 6⅝" Height: 11¼" Thickness: 1¼" Weight: 2¼ lbs.	1"	219110
		General Purpose	209111			
		Special	209112			
	Diallyl Phthalate	Blank	229110		3½"	239110
		General Purpose	229111			
		Special	229112			

RECEIVERS

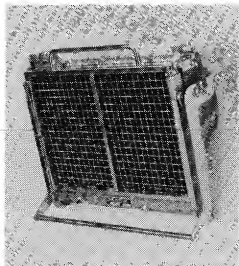
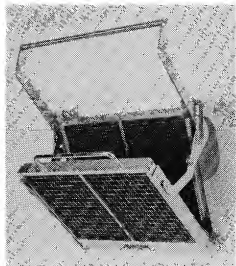
Number of Positions



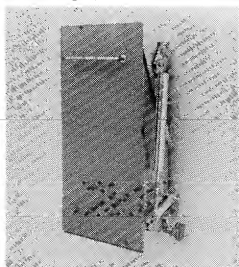
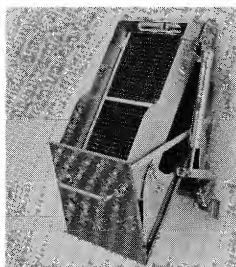
1280 POSITIONS — MODEL 922



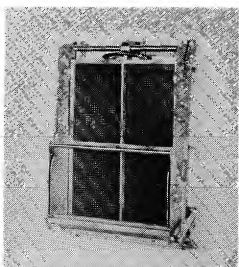
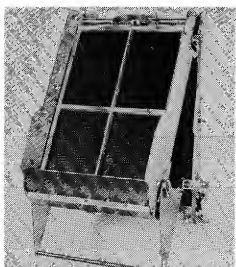
1496 POSITIONS — MODEL 912



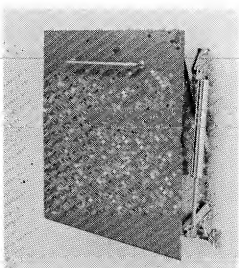
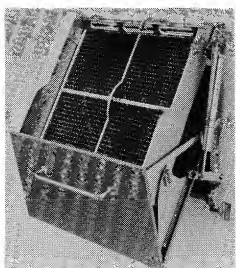
1600 POSITIONS — MODEL 921



2560 POSITIONS — MODEL 908



3264 POSITIONS — MODEL 909



5120 POSITIONS — MODEL 910

Position Arrangement		Panel Material	Contact Plating	Catalog Number	Dimensions and Weight	
Horizontal	Vertical					
40	32	Phenolic	Nickel	109221	Width: 13 $\frac{3}{8}$ " Height: 13-9/16" Thickness: 6-5/32" Weight: 18 lbs.	
			Gold	109222		
		Diallyl Phthalate	Nickel	129221		
			Gold	129222		
44	34	Phenolic	Nickel	109121	Width: 16 $\frac{3}{4}$ " Height: 16 $\frac{3}{4}$ " Thickness: 6 $\frac{3}{4}$ " Weight: 31 lbs.	
			Gold	109122		
		Diallyl Phthalate	Nickel	129121		
			Gold	129122		
50	32	Phenolic	Nickel	109211	Width: 16-5/16" Height: 13 $\frac{3}{8}$ " Thickness: 6 $\frac{1}{4}$ " Weight: 21 $\frac{1}{4}$ lbs.	
			Gold	109212		
		Diallyl Phthalate	Nickel	129211		
			Gold	129212		
40	64	Phenolic	Nickel	109081	Width: 16-3/32" Height: 26-15/16" Thickness: 6 $\frac{3}{4}$ " Weight: 60 lbs.	
			Gold	109082		
		Diallyl Phthalate	Nickel	129081		
			Gold	129082		
48	68	Phenolic	Nickel	109091	Width: 17-13/16" Height: 26 $\frac{7}{8}$ " Thickness: 6-15/16" Weight: 52 lbs.	
			Gold	109092		
		Diallyl Phthalate	Nickel	129091		
			Gold	129092		
80	64	Phenolic	Nickel	109101	Width: 26-15/16" Height: 26-15/16" Thickness: 6 $\frac{3}{4}$ " Weight: 96 $\frac{1}{2}$ lbs.	
			Gold	109102		
		Diallyl Phthalate	Nickel	129101		
			Gold	129102		

PLUGBOARDS

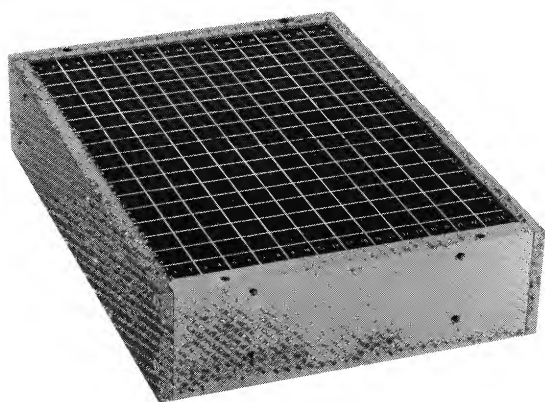
COVERS

	Panel Material	Silk Screened Legend	Catalog Number	Dimensions and Weight	Depth	Catalog Number
	Phenolic	Blank	209220	Width: 11-1/16" Height: 11 ⁵ / ₈ " Thickness: 1 ¹ / ₄ " Weight: 3 ³ / ₈ lbs.	1"	219220
		General Purpose	209221			
		Special	209222			
	Diallyl Phthalate	Blank	229220		2 ³ / ₄ "	239220
		General Purpose	229221			
		Special	229222			
	Phenolic	Blank	209120	Width: 11 ¹ / ₂ " Height: 11-3/16" Thickness: 1 ¹ / ₄ " Weight: 4 lbs.	1"	219120
		General Purpose	209121			
		Special	209122			
	Diallyl Phthalate	Blank	229120		3"	239120
		General Purpose	229121			
		Special	229122			
	Phenolic	Blank	209210	Width: 14" Height: 11-9/16" Thickness: 1 ¹ / ₄ " Weight: 4 lbs.	1"	219210
		General Purpose	209211			
		Special	209212			
	Diallyl Phthalate	Blank	229210		2 ³ / ₄ "	239210
		General Purpose	229211			
		Special	229212			
	Phenolic	Blank	209080	Width: 11 ¹ / ₄ " Height: 20 ³ / ₄ " Thickness: 1 ¹ / ₄ " Weight: 7 lbs.	1 ¹ / ₂ "	219080
		General Purpose	209081			
		Special	209082			
	Diallyl Phthalate	Blank	229080		2 ³ / ₄ "	239080
		General Purpose	229081			
		Special	229082			
	Phenolic	Blank	209090	Width: 15 ¹ / ₄ " Height: 21 ⁵ / ₈ " Thickness: 2 ⁷ / ₈ " Weight: 10 ¹ / ₄ lbs.	1 ¹ / ₂ "	219090
		General Purpose	209091			
		Special	209092			
	Diallyl Phthalate	Blank	229090		2 ³ / ₄ "	239090
		General Purpose	229091			
		Special	229092			
	Phenolic	Blank	209100	Width: 21 ⁷ / ₈ " Height: 20 ³ / ₄ " Thickness: 1 ¹ / ₄ " Weight: 12 ³ / ₄ lbs.	1 ¹ / ₂ "	219100
		General Purpose	209101			
		Special	209102			
	Diallyl Phthalate	Blank	229100		2 ³ / ₄ "	239100
		General Purpose	229101			
		Special	229102			

FIXED PLUGBOARD PROGRAMMING SYSTEMS

When there is no need for a removable plugboard, such as when program changes are slight or infrequent, a fixed plugboard system is indicated.

The fixed plugboard programming system consists of a contact panel and a plugboard panel held in the proper relationship by a surrounding frame. Connection to the contacts and patching are accomplished in the same manner and with the same hardware as the removable plugboard systems. Manual Plugwires only may be used.



FRAMES

Material	Finish
Aluminum	MIL-C-5541

CONTACT SPRINGS

Material	Plating Thickness	Average Contact Resistance	Continuous Current Rating	Maximum Operating Voltage (Sea Level)
Beryllium Copper (Heat Treated)	Nickel .0001"	Nickel Contact Spring to Nickel Tip .009 Ω	5 Amperes at 68° F	1500v DC/1000v RMS AC
	Gold .00006" (over .0001" Nickel)	Gold Contact Spring to Gold Tip .004 Ω		

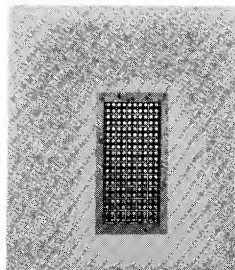
PANELS

Material	Leakage Resistance Between Adjacent Holes	Hole Spacing (Center to Center)		
		Model	Horizontal	Vertical
Phenolic	$> 5 \times 10^{10}$	809	.281"	.281"
Diallyl Phthalate (mineral filled, nylon fibre reinforced)	$> 1 \times 10^{13}$	All Other Models	.250"	.281"

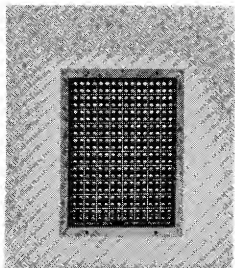
CAPACITANCE AND INDUCTANCE

		Phenolic	Diallyl
CAPACITANCE between adjacent contact springs and plugwire tip combination:	Horizontal	5.0 mmf.	5.98 mmf.
	Vertical	4.25 mmf.	5.10 mmf.
CAPACITANCE between one contact spring-plugwire tip combination and eight surrounding:		12.95 mmf.	15.5 mmf.
INDUCTANCE of contact spring—plugwire tip combination:		.05 μ h	

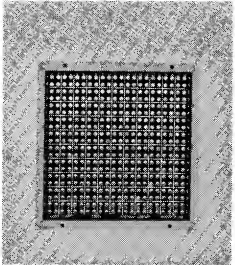
MODEL 802
200 POSITIONS



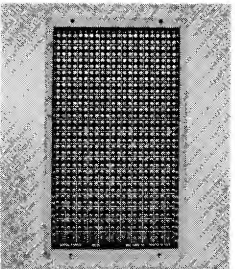
MODEL 803
320 POSITIONS



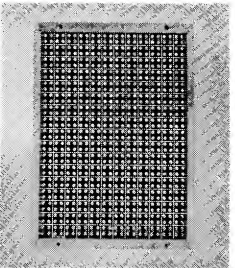
MODEL 804
440 POSITIONS



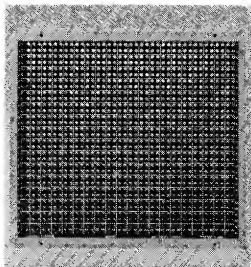
MODEL 811
748 POSITIONS



MODEL 809
816 POSITIONS



MODEL 822
1280 POSITIONS



Position Arrangement		Panel Material	Contact Plating	Catalog Number	Dimensions and Weight
Horizontal	Vertical				
10	20	Phenolic	Nickel	108021	Width: 3 $\frac{7}{8}$ " Height: 6 $\frac{7}{8}$ " Thickness: 2"
			Gold	108022	
		Diallyl Phthalate	Nickel	128021	
			Gold	128022	
16	20	Phenolic	Nickel	108031	Width: 4 $\frac{7}{8}$ " Height: 6 $\frac{7}{8}$ " Thickness: 2"
			Gold	108032	
		Diallyl Phthalate	Nickel	128031	
			Gold	128032	
22	20	Phenolic	Nickel	108041	Width: 6-7/16" Height: 6 $\frac{7}{8}$ " Thickness: 2"
			Gold	108042	
		Diallyl Phthalate	Nickel	128041	
			Gold	128042	
22	34	Phenolic	Nickel	108111	Width: 6-7/16" Height: 11 $\frac{1}{8}$ " Thickness: 2"
			Gold	108112	
		Diallyl Phthalate	Nickel	128111	
			Gold	128112	
24	34	Phenolic	Nickel	108091	Width: 7-9/16" Height: 10 $\frac{1}{2}$ " Thickness: 2"
			Gold	108092	
		Diallyl Phthalate	Nickel	128091	
			Gold	128092	
40	32	Phenolic	Nickel	108221	Width: 10 $\frac{7}{8}$ " Height: 10 $\frac{1}{4}$ " Thickness: 2"
			Gold	108222	
		Diallyl Phthalate	Nickel	128221	
			Gold	128222	

Silk-Screening: Fixed Plugboard Systems are normally supplied with MAC Panel standard general purpose legend. Special legends should be submitted for individual quotation at which time a part number will be assigned to the special legend.

PLUGWIRES

Manual plugwires are equipped with a ball-d-tent device which prevents the plugwire from being dislodged when pushed from the rear side of the panel. However, it is easily removed by pulling on the plugwire from the front side.

Manual wire styles consist of single conductor, single conductor Y-type, coaxial, dual conductor, shielded twisted pair, 5 conductor, 4 conductor shielded, and 7 conductor shielded. The dual conductor plugwire has color coded wire to distinguish polarity. The coaxial plugwire, shielded twisted pair plugwire, 4 conductor shielded plugwire, 7 conductor shielded plugwire, and the 5 conductor plugwire, have polarized tip moldings.

Also available are jackplugs (for shunting vertical or horizontal adjacent holes), and common connector assemblies (for making Y-connected plugwires). All plugwires are color coded as to length for easy identification.

The fixed wire is locked into the hole of the panel by a spring-barb which is integral with the tip. Removal of fixed wires is easily and rapidly accomplished by the use of a wire tool available from MAC Panel. The fixed wire is not damaged by frequent removal and can be used indefinitely.

Fixed plugwires are available in a number of color-coded lengths, either in single or Y-type styles. Y-type plugwires are made with as many as six wires, all connected by a solderless color-coded connector. Special Y-type plugwires in any number of wire endings and lengths will be made by MAC Panel on special order.

Diode wires, in which a high quality diode is encapsulated in a rigid thermoplastic material, are available in both fixed and manual styles. The diode is rated at 125 ma. forward current and 250v peak inverse voltage.

MATERIAL AND SPECIFICATIONS

PLUGWIRE TIPS

Type	Base Material	Plating Thickness	Crimp Test
Nickel	Brass	.0001"	20 lbs. Pullout
Gold	Brass	.00003" Hard Gold over .0001" Nickel.	20 lbs. Pullout

PLUGWIRES

Type	Conductor	Voltage Rating	Insulation	Jacket	Tip Molding	Capacitance	Impedance
Manual Plugwires	No. 20 AWG (41 strands of No. 36 AWG)	300v RMS	Polyvinyl Chloride Plastic (PVC)	Lacquered Braided Cotton	PVC		
Fixed Plugwires	No. 20 AWG (7 strands of No. 28 AWG)	300v RMS	PVC				
Coaxial Plugwires	(7 strands of .0063")	1500v RMS	Teflon	PVC	PVC	30 mmf/ft.	50 Ω
Shielded Twisted Pair Plugwires	No. 20 AWG (19 strands of No. 32 AWG. Silver plated Copper)	600v RMS	Teflon	PVC	PVC	Conductor to Conductor: 33.3 mmf/ft. Conductor to Shield: 56.8 mmf/ft.	Conductor to Conductor: 44.3 Ω Conductor to Shield: 27.0 Ω
Five Conductor Plugwires	No. 24 AWG (7 strands of No. 32 AWG)	600v RMS	PVC	PVC	PVC		
Four Conductor Shielded Plugwires	No. 24 AWG (7 strands of No. 32 AWG)	1000v RMS	PVC	PVC	PVC		
Seven Conductor Shielded Plugwires	No. 20 AWG (7 strands of No. 28 AWG)	1000v RMS	PVC	PVC	PVC		

FIXED PLUGWIRES

Available in a full range of color-coded lengths

FIXED SINGLE CONDUCTOR PLUGWIRES

Overall Length	Tip Plating	Catalog Number	Insulation Color
4"	Nickel Gold	310401 310402	Gray
7"	Nickel Gold	310701 310702	Black
9"	Nickel Gold	310901 310902	Yellow
12"	Nickel Gold	311201 311202	Red
15"	Nickel Gold	311501 311502	Blue
24"	Nickel Gold	312401 312402	Green
32"	Nickel Gold	313201 313202	Orange

FIXED SINGLE CONDUCTOR PLUGWIRES

3 Pin
Common



4 Pin
Common



5 Pin
Common



6 Pin
Common



FIXED Y-TYPE PLUGWIRES

Length	Tip Plating	Catalog Number				Insulation Color
		3 Pin Common	4 Pin Common	5 Pin Common	6 Pin Common	
9"	Nickel Gold	310931 310932	310941 310942	310951 310952	310961 310962	Yellow
12"	Nickel Gold	311231 311232	311241 311242	311251 311252	311261 311262	Red
15"	Nickel Gold	311531 311532	311541 311542	311551 311552	311561 311562	Blue
24"	Nickel Gold	312431 312432	312441 312442	312451 312452	312461 312462	Green
32"	Nickel Gold	313231 313232	313241 313242	313251 313252	313261 313262	Orange



WIRE TOOL for insertion and removal of fixed plugwires. Catalog Number 412000.

FIXED SINGLE DIODE WIRES

Length	Tip Plating	Part Number	Insulation Color
12"	Nickel Gold	1311201 1311202	Red
15"	Nickel Gold	1311501 1311502	Blue
24"	Nickel Gold	1312401 1312402	Green
32"	Nickel Gold	1313201 1313202	Orange

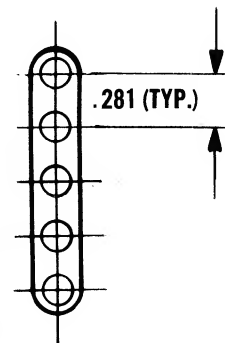
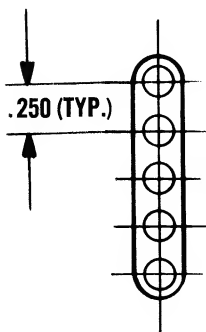
FIVE-CONDUCTOR PLUGWIRE

For use on .250 Centers

Overall Length	Tip Plating	Catalog Number	Tip Insulation Color
6"	Nickel Gold	390601 390602	Black
9"	Nickel Gold	390901 390902	Yellow
12"	Nickel Gold	391201 391202	Red
15"	Nickel Gold	391501 391502	Blue
24"	Nickel Gold	392401 392402	Green
32"	Nickel Gold	393201 393202	Orange

For use on .281 Centers

Overall Length	Tip Plating	Catalog Number	Tip Insulation Color
6"	Nickel Gold	390611 390612	Black
9"	Nickel Gold	390911 390912	Yellow
12"	Nickel Gold	391211 391212	Red
15"	Nickel Gold	391511 391512	Blue
24"	Nickel Gold	392411 392412	Green
32"	Nickel Gold	393211 393212	Orange



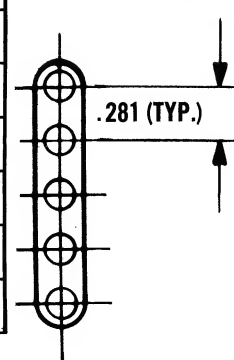
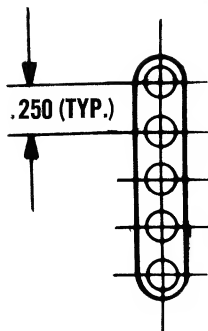
FOUR-CONDUCTOR SHIELDED PLUGWIRE

For use on .250 Centers

Overall Length	Tip Plating	Catalog Number	Tip Insulation Color
6"	Gold	350602	Black
9"	Gold	350902	Yellow
12"	Gold	351202	Red
15"	Gold	351502	Blue
24"	Gold	352402	Green
32"	Gold	353202	Orange

For use on .281 Centers

Overall Length	Tip Plating	Catalog Number	Tip Insulation Color
6"	Gold	350612	Black
9"	Gold	350912	Yellow
12"	Gold	351212	Red
15"	Gold	351512	Blue
24"	Gold	352412	Green
32"	Gold	353212	Orange



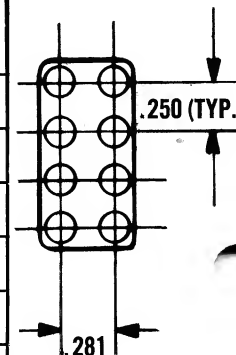
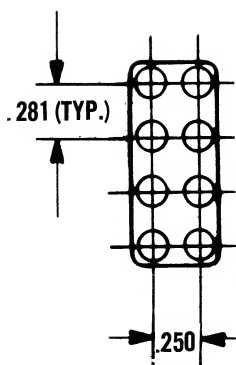
SEVEN-CONDUCTOR SHIELDED PLUGWIRE

For vertical use

Overall Length	Tip Plating	Catalog Number	Tip Insulation Color
6"	Gold	380602	Black
9"	Gold	380902	Yellow
12"	Gold	381202	Red
15"	Gold	381502	Blue
24"	Gold	382402	Green
32"	Gold	383202	Orange

For horizontal use

Overall Length	Tip Plating	Catalog Number	Tip Insulation Color
6"	Gold	380612	Black
9"	Gold	380912	Yellow
12"	Gold	381212	Red
15"	Gold	381512	Blue
24"	Gold	382412	Green
32"	Gold	383212	Orange

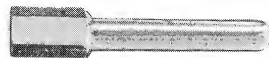


MAC PANEL GENERAL HARDWARE AND TOOLS

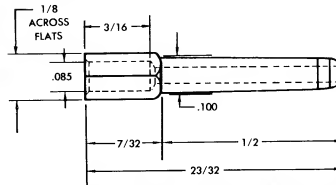


CONTACT SPRINGS

Standard contact spring used in all models of MAC Panel Plugboard Programming System. **Catalog Numbers:** Nickel Plated, 401101; Gold Plated, 401062.



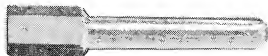
TAPER PIN TERMINAL SERIES 157-16/20/22



Makes single connection between internal equipment wiring and receptacle of contact spring. Made of brass, drilled for various wires which can be either soldered or crimped. Supplied unplated, nickel plated, or gold plated. Nickel plating is .0001" thick. Gold plating is hard gold, .00003" thick over .0001" thick nickel plating.

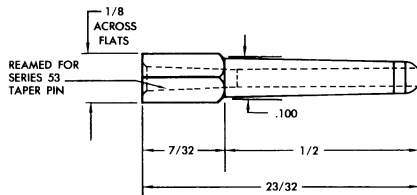
CATALOG NUMBERS

Plating	157-18	157-20	157-22
Unplated	423200	423000	423300
Nickel	423201	423101	423301
Gold	423232	423032	423332



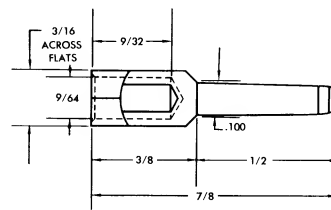
TAPER PIN TERMINAL SERIES 157-53

Used as an adapter between contact spring receptacle and series 53 taper pin. Plating specifications identical to taper pin terminal above. **Catalog Numbers:** Unplated, 423004; Nickel Plated, 423105; Gold Plated, 423036.



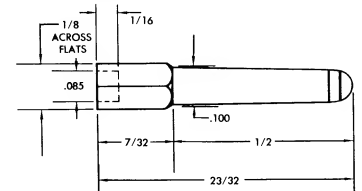
TAPER PIN TERMINAL MULTIPLE-SERIES 157

Used to terminate several wires of internal equipment wiring at one point. Side vent in taper pin permits easy soldering of wire endings. Plating specifications identical to taper pin terminal above. **Catalog Numbers:** Unplated, 425004; Nickel Plated, 425105; Gold Plated, 425036.



TAPER PLUG SERIES 157

Used with shunts below to shunt contact springs on rear of receiver panel. Plating specifications identical to taper pin terminal above. **Catalog Numbers:** Unplated, 422004; Nickel Plated, 422105; Gold Plated, 422036.



STRAIGHT SHUNTS

Used with taper plugs and/or pin terminals to shunt adjacent positions of contact springs on rear of receiver panel. Horizontal contact spring spacing is .250" on all models except the 900 and 901, which have .281" spacing. Vertical contact spring spacing is .281" on all models. .250" shunt is distinguished from .281" shunt by the corner cut. Made of phosphor bronze, with plating same as taper pin terminal.

Catalog Numbers:	Unplated	Nickel	Gold
.250" Centers	408000	408101	408032
.281" Centers	408004	408105	408036



STRIP SHUNTS

Horizontal and vertical shunts as shown above are also available in strip form. Horizontal shunts are on .250" centers and cover 40 consecutive positions on the receiver. Vertical shunts are on .281" centers and cover 34 consecutive positions on the receiver. Shunts may be cut to length as required. **Catalog Numbers:** Horizontal — Nickel, 417401; Gold, 417402. Vertical — Nickel, 407341; Gold, 407342.

DIAGONAL SHUNTS



Used with taper plugs and/or pin terminals above to shunt adjacent diagonal contact springs on rear of receiver panel. Plating specifications identical to taper pin terminal above. Made of phosphor bronze. **Catalog Numbers:** Unplated, 409000; Nickel Plated, 409101; Gold Plated, 409032.

HAND CRIMPING TOOL

Used to crimp taper pin terminals series 157-18/-20/22 to internal equipment wiring. Tool is crimping cycle controlled to assure the quality of the four-indent crimp. **Catalog Numbers:** Crimping Tool Frame, 452000; Taper Pin Positioner, 452001; Gaging Pin, 452002.



TAPER PIN INSERTION TOOL

Used to insert all taper pin terminals. Tool provides for manual insertion of pins into contact springs. Tool is spring controlled to give a constant insertion energy and to limit compressive stresses in the board to a safe level. **Catalog Number:** 413001.



TAPER PIN EXTRACTION TOOL

For use in the removal of all taper pin terminals with the exception of multiple taper pin. **Catalog Number:** 415000.



OEM DIVISION • 2060 BRENTWOOD STREET
HIGH POINT, NORTH CAROLINA

PRICE LIST

MPE
PANEL

PLUGBOARD PROGRAMMING SYSTEMS

DEM DIVISION CATALOG 101



RECEIVERS

PLUGBOARDS

COVERS

RECEIVERS

Model Number	Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Model Number	
902	109021	70.00	209020	10.50	219020	2.00	912	
	109022	77.00	209021		239020	5.50		
	129021	75.00	209022			15.25		2.50
	129022	82.00	229020	6.00				
			229021		219030			
		229022	239030					
903	109031	85.00		209030		11.25	2.75	921
	109032	96.00		209031	17.25			
	129031	91.00	209032	219040				
	129032	102.00	229030			239040		
			229031		219010			
		229032	239010					
904	109041	99.00		209040		12.50	2.00	908
	109042	114.00		209041	21.50			
	129041	109.00	209042	219110				
	129042	124.00	229040			239110		
			229041		219220			
		229042	239220					
901	109011	138.00		209110		16.25	2.00	909
	109012	161.00		209011	25.25			
	129011	147.00	209012	219110				
	129012	171.00	229011			239110		
			229012		219110			
911	109111	303.00	209111	11.50			2.00	910
	109112	328.00	209112			20.50		
	129111	312.00	229110		219220			
	129112	338.00	229111	239220				
			229112			31.00		
922	109221	209.00	209220		19.00		2.00	
	109222	253.00	209221	6.50				
	129221	222.00	209222			219220		
	129222	266.00	229220		239220			
			229221	31.00				
		229222	31.00					

2

FIXED PLUGBOARD PROGRAMMING SYSTEMS

PLUGBOARDS

COVERS

Catalog Number	Price	Catalog Number	Price	Catalog Number	Price	Model Number	Catalog Number	Price
109121	347.00	209120	19.95	219120	2.75	802	108021	63.00
109122	396.00	209121					108022	69.00
129121	366.00	209122					128021	67.00
129122	416.00	229120	128022	74.00				
109211	295.00	229121	37.95	239120	6.50	803	108031	77.00
109212	335.00	229122					108032	86.00
129211	307.00	209210					128031	82.00
129212	347.00	209211	23.50	219210	3.50		128032	92.00
109081	715.00	209212				108041	89.00	
109082	800.00	229210				108042	103.00	
129081	741.00	229211	43.50	239210	8.00	804	128041	99.00
129082	826.00	229212					128042	112.00
109091	1160.00	209080					108111	150.00
109092	1210.00	209081	31.50	219080	3.25		108112	170.00
129091	1228.00	209082				128111	165.00	
129092	1265.00	229080				128112	180.00	
109101	1265.00	229081	55.50	239080	6.50	811	108091	170.00
109102	1436.00	229082					108092	190.00
129101	1318.00	209090					128091	185.00
129102	1488.00	209091	37.50	219090	7.50		128092	205.00
		209092				108221	190.00	
		229090				108222	225.00	
		209100	78.00	239090	12.50	809	128221	200.00
		209101					128222	245.00
		209102						
		229100	87.50	239100	7.50		822	
		229101						
		229102						

3

FIXED PLUGWIRES

	SINGLE CONDUCTOR		SINGLE CONDUCTOR Y-TYPE							
			3 PIN		4 PIN		5 PIN		6 PIN	
Length	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100
4"	310401	3.92								
	310402	6.92								
7"	310701	4.60								
	310702	7.60								
9"	310901	5.28	310931	14.44	310941	17.84	310951	21.24	310961	24.64
	310902	8.28	310932	19.24	310942	24.24	310952	29.24	310962	34.24
12"	311201	5.96	311231	15.28	311241	18.72	311251	22.08	311261	25.52
	311202	8.96	311232	20.08	311242	25.12	311252	30.08	311262	35.12
15"	311501	6.64	311531	16.16	311541	19.56	311551	23.96	311561	27.20
	311502	9.64	311532	20.96	311542	25.96	311552	31.96	311562	36.80
24"	312401	8.00	312431	18.72	312441	22.96	312451	27.20	312461	31.44
	312402	11.00	312432	23.52	312442	29.36	312452	35.20	312462	41.04
32"	313201	12.92	313231	21.24	313241	25.52	313251	29.76	313261	37.40
	313202	15.92	313232	26.04	313242	31.92	313252	37.76	313262	47.00

DIODE WIRE			ACCESSORIES		
Length	Catalog Number	Price Per 100	Item	Catalog Number	Price Per 100
12"	1311201	128.00	CONNECTOR	309101	11.04
	1311202	133.00		309102	15.04
15"	1311501	129.00	FILTER PLUG	425000	195.00
	1311502	134.00		425032	225.00
24"	1312401	130.00	FIXED TIPS	Nickel 310001	2.04
	1312402	135.00			
32"	1313201	131.00		Gold 310002	3.97
	1313202	136.00			

MANUAL PLUGWIRES

SINGLE CONDUCTOR			SINGLE CONDUCTOR Y-TYPE PLUGWIRES							
			3 PIN		4 PIN		5 PIN		6 PIN	
Length	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100
6"	300601	8.84								
	300602	12.84								
9"	300901	9.68	300931	25.52	300941	32.32	300951	39.12	300961	45.92
	300902	13.68	300932	31.52	300942	40.32	300952	49.12	300962	57.92
12"	301201	10.36	301231	27.20	301241	34.84	301251	42.48	301261	50.16
	301202	14.36	301232	33.20	301242	42.84	301252	52.48	301262	62.16
15"	301501	11.40	301531	28.88	301541	37.40	301551	45.92	301561	54.40
	301502	15.40	301532	34.88	301542	45.40	301552	55.92	301562	66.40
24"	302401	12.76	302431	31.44	302441	41.64	302451	51.84	302461	62.04
	302402	16.76	302432	37.44	302442	49.64	302452	61.84	302462	74.04
32"	303201	14.44	303231	34.00	303241	45.92	303251	57.80	303261	73.12
	303202	18.44	303232	40.00	303242	53.92	303252	67.80	303262	85.12

DUAL CONDUCTOR			DIODE WIRE		SINGLE CONDUCTOR COAXIAL		SHIELDED TWISTED PAIR		ACCESSORIES		
Length	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Item	Catalog Number	Price Per 100
6"	330601	20.80							Con- nector	309101	11.04
	330602	28.80			320602	93.00	340602	160.00		309102	15.04
9"	330901	22.80							Filter Plug	425000	195.00
	330902	30.80			320902	100.00	340902	168.00		425032	225.00
12"	331201	24.40	1301201	141.00					Jack Plugs	309001	8.84
	331202	32.40	1301202	151.00	321202	107.00	341202	176.00		309002	12.84
15"	331501	26.80	1301501	142.00					Ball- D- Tent Tips	Nickel 300001	4.50
	331502	34.80	1301502	152.00	321502	114.00	341502	184.00			
24"	332401	30.00	1302401	145.00						Gold 300002	5.90
	332402	38.00	1302402	155.00	322402	135.00	342402	200.00			
32"	333201	34.00	1303201	147.00							
	333202	42.00	1303202	158.00	323202	155.00	343202	216.00			

MANUAL PLUGWIRES

FOR USE ON .250 CENTERS

Length	Five Conductor		Four Conductor Shielded		Seven Conductor Shielded	
	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100
6"	390601	86.00				
	390602	145.00	350602	266.00	380602	373.00
9"	390901	91.00				
	390902	150.00	350902	274.00	380902	380.00
12"	391201	95.00				
	391202	154.00	351202	282.00	381202	387.00
15"	391501	99.00				
	391502	159.00	351502	290.00	381502	396.00
24"	392401	113.00				
	392402	173.00	352402	305.00	382402	411.00
32"	393201	124.00				
	393202	185.00	353202	320.00	383202	426.00

FOR USE ON .281 CENTERS

Length	Five Conductor		Four Conductor Shielded		Seven Conductor Shielded	
	Catalog Number	Price Per 100	Catalog Number	Price Per 100	Catalog Number	Price Per 100
6"	390611	86.00				
	390612	145.00	350612	266.00	380612	373.00
9"	390911	91.00				
	390912	150.00	350912	274.00	380912	380.00
12"	391211	95.00				
	391212	154.00	351212	282.00	381212	387.00
15"	391511	99.00				
	391512	159.00	351512	290.00	381512	396.00
24"	392411	113.00				
	392412	173.00	352412	305.00	382412	411.00
32"	393211	124.00				
	393212	185.00	353212	320.00	383212	426.00

GENERAL HARDWARE AND TOOLS

HARDWARE

Item	Catalog Number	Price Per 100	Item	Catalog Number	Price Per 100
Contact Springs	401101	5.00	Taper Plug Series 157	422004	1.20
	401062	7.50		422105	1.50
				422036	3.20
Taper Pin Terminal Series 157-18	423200	1.30	Straight Shunts .250 Centers	408000	1.10
	423201	1.60		408101	1.40
	423232	3.30		408032	2.10
Taper Pin Terminal Series 157-20	423000	1.30	Straight Shunts .281 Centers	408004	1.20
	423101	1.60		408105	1.50
	423032	3.30		408036	2.20
Taper Pin Terminal Series 157-22	423300	1.30	Diagonal Shunts	409000	1.10
	423301	1.60		409101	1.40
	423332	3.30		409032	2.10
Taper Pin Terminal Series 157-53	423004	1.30	Strip Shunts .250 Centers	417400	1.60 ea.
	423105	1.60		417401	2.00 ea.
	423036	3.30		417402	2.50 ea.
Taper Pin Multiple Series 157	425004	3.00	Strip Shunts .281 Centers	407340	1.40 ea.
	425105	3.30		407341	1.80 ea.
	425036	5.50		407342	2.20 ea.

TOOLS

Item	Catalog Number	Price Each
Fixed Plugwire Insertion and Removal Tool	412000	4.00
Taper Pin Insertion Tool	412001	3.00
Spring Controlled Taper Pin Insertion Tool	413001	23.00
Hand Crimping Tool	451000	32.00
Ratchet Controlled Crimping Tool	452100	105.00
Ratchet Controlled Crimping Tool Frame	452000	90.00
Ratchet Controlled Crimping Tool Positioner	452001	15.00
Ratchet Controlled Crimping Tool Gaging Pin	452002	5.00
Extraction Tool	415000	14.00

MAC
PANEL

TERMS AND CONDITIONS

- The price of plugboards includes the cost of a silk-screened, one color MAC Panel general purpose legend. When a special legend is requested, an initial one-time charge for artwork and silk-screen construction is additional. Special legends should be submitted for quotations. Three copies of special legend drawings are required for silk-screen construction. Artwork remains the property of the customer and is available upon written request.
- All prices listed herein are subject to change without notice.
- Delivery terms: F.O.B. High Point, North Carolina.
- Payment terms: Net 30 days.
- Credit or replacement will be allowed on returned parts after we have had an opportunity to inspect them, provided they are returned with prior approval of the home office of MAC Panel Company within thirty days after date of receipt. Credit will not be issued on any parts which have been altered or defaced in any way or upon which any additional operation has been performed. Credit will be issued on goods ordered in error less a 20% restocking charge.
- When ordering, specify the MAC Panel Company catalog number for each item.

MAC
PANEL

OEM DIVISION • 2060 BRENTWOOD STREET
HIGH POINT, NORTH CAROLINA

Supplement to Price List #101

Effective March 1, 1965, the following prices will apply to items listed below:

<u>PART NUMBER</u>	<u>PRICE INCREASED TO:</u>
401101 - nickel contact springs	\$ 5.75/c
401062 - gold contact springs	9.38/c
239110 - Covers	7.50/each
239010 - Covers	7.50/each
239120 - Covers	8.25/each
239080 - Covers	8.75/each
239100 - Covers	10.00/each
452002 - Ratchet Controlled Crimping Tool Gaging Pin	15.00/each